
SMITH & WESSEL ASSOCIATES, INC.

HAZARDOUS BUILDING MATERIALS AND AIR QUALITY SPECIALISTS

November 23, 2011

United States Environmental Protection Agency
Region 1
5 Post Office Square, Suite 100
Boston, Massachusetts 02109-3912
Attn: Kimberly N. Tisa, PCB Coordinator

Ref: Leominster High School, Leominster, MA, PCBs Remediation Plan

Dear Ms. Tisa:

In response to your letter dated May 3, 2011, on behalf of the Leominster Public Schools, Smith & Wessel Associates (SWA) submits this letter addressing the questions and comments you had pertaining to the Work Plan for Removal of PCBs at Leominster High School in Leominster, Massachusetts. Your comments and our responses are addressed as follows:

General Comments

- 1. The sampling that was conducted is insufficient to support a PCB cleanup plan under 40 CFR 761.61(a). Additional sampling is recommended so that nature and extent of the PCB contamination can be established. In addition, the laboratory reporting limits are too high to determine the classification of the PCB-contaminated materials.*

Additional sampling has been conducted, including sampling of brick and concrete substrates abutting PCB caulk as well as soil at driplines and beyond where caulk is present on the exterior. Results are included as appendices to the plan and summarized within the body of the plan as further detailed below.

- 2. All information required under 761.61(a)(3) was not provided.*

These items are addressed under specific comments below.

Specific Comments

- 1. It is unclear who will be responsible for the work proposed under this plan. The Notification indicates that the plan is being provided on behalf of the Purchasing Agent, Leominster City Hall. However, clarification is required on who will be responsible for the proposed work on behalf of the City. Thus, please provide the name, title, and contact information for the person and the entity that will be responsible for the proposed PCB abatement work.*

Mr. James Jolicoeur, Superintendent of the Leominster Public Schools is responsible for the proposed work. He can be reached at 978-534-7700.

2. *Section 761.(a)(3)(i)(E) requires that an owner's certification be submitted with the Notification. No certification was found in the Notification.*

The certification is attached.

3. *Page 1. Fiber board, concrete and brick would all be classified as porous surfaces. Sampling for porous surfaces should be conducted on a bulk basis, not a surface area basis. EPA notes that the only post-remediation sampling proposed is wipe sampling which would not be appropriate for porous surfaces.*

While we understand that fiber board, concrete and brick are classified as porous, we do not envision any scenario where bulk sampling would be necessary. The fiber board will be removed and disposed of as PCB remediation waste. Concrete and brick has been bulk sampled to determine if leaching from PCB caulk has occurred but their removal is not proposed. After cleaning brick and concrete, contaminated materials will be sealed with an encapsulant to provide a barrier to the environment. Wipe sampling of encapsulated surfaces has been conducted in "pilot test" areas and shows that encapsulation of wall surfaces adjacent to caulk seams is effective. Post remediation and encapsulation of masonry surfaces is further proposed to verify the effectiveness of the encapsulant. Where concentrations of PCBs within caulk seams may be slightly elevated above the 1 µg/100 cm² standard, they will be further re-sealed with new caulking. Thus, tactile exposure to elevated concentration of PCBs is highly unlikely.

4. *The Notification appears to distinguish between PCB caulk with greater than or equal to 50 parts per million from PCB caulk with less than 50 ppm. The Notification also seems to infer the 50 ppm is the acceptable EPA limit for caulk. Please be aware that < 50 ppm caulk and < 50 ppm PCB remediation waste may also be regulated for removal and/or cleanup unless the < 50 ppm PCB caulk meets the definition of an Excluded PCB Product as defined at 761.3. Unless the City of Leominster can document that this caulk meets the Excluded PCB Product criteria, this caulk would be regulated under 40 CFR Part 761 for removal and/or cleanup.*

We have added to the plan the removal of window caulking that tested between 1-50 ppm (see Table 5).

5. *With respect to the previous comment 4 above, EPA notes that the laboratory detection limit for many of the caulks sampled was greater than one ppm. Thus, the detection limits may not be sufficient to ascertain the regulatory status of these products.*

Based on EPA comments, we re-sampled caulking within the 1979 section of the building where the higher detection limits were present in the initial analysis. The samples were submitted to Contest Analytical for analysis and resulting detection limits were less than one ppm for all samples. Also, it should be noted that due to the date of construction it would have been unlikely for PCBs to have been used in the caulk. Further, the caulk is original and any PCBs concentrations would not have been due to contamination from another PCBs source.

6. *Based on the information provided, EPA cannot ascertain if the samples that were collected adequately represent the various types of caulk present in the building, both interior and exterior. EPA would recommend that the caulks be assessed based on caulk type and location (e.g. exterior versus interior; door versus window versus expansion joint, color) and any other characteristics that could be used to distinguish between the caulks.*

Each different type of caulk observed in the building was uniquely sampled, both interior and exterior as detailed in Table 1 of the work plan.

7. *The Notification should include more information on the quantity of the various types of PCB caulk present in addition to the quantities of the various building substrates (e.g. # of windows and doors and linear footage of caulk associated with each type; linear footage of expansion joints, etc.*

Table 5 in Section 3.1 of the work plan provides detailed quantities by linear foot of each type of PCB caulk identified in the building. An estimate of 36,000 square feet of masonry assumed to be contaminated with PCBs (above one ppm) is present.

8. *With respect to the air sampling results, the TO-10A method is an acceptable air method. However, it is unclear why the analysis only addressed PCB Aroclors. EPA generally recommends that the air analysis be either for PCB homologues or PCB congeners. Based on the information provided, there is a potential that the PCB air concentrations are higher if the PCBs are not in the dust fraction but rather in the vapor fraction.*

Based on EPA comments, additional samples were collected and analyzed for PCB homologues. The results are summarized in Table 2B of the revised plan. Results range from none detected to 130 nanograms per cubic meter of air. These results are well below the EPA acceptable concentrations for high school students and adults.

9. *Table 2 – For Sample No. 6, the table indicates that the PCB result is 57 ng/m³; however, the laboratory report indicates that the PCB result is 0.57 µg/m³, which translates to 570 ng/m³, not 57 ng/m³. If the reported result is correct, the PCB*

concentration in the indoor air exceeds EPA's recommended concentration of 450 ng/m³ for adults 19 years and older.

Although we made a translation error on the above sample, it is important to note that this sample was collected during a small-scale project within a containment area where PCB caulk was removed. Thus, it was a worst-case sample and not indicative of normal airborne concentrations within the school.

10. Page 6, Section 1.3 – The Notification indicates that substrate samples were collected at no more than 2-inches thick.

- a. The sampling procedure described is inconsistent with EPA's concrete SOP, which establishes a 0.5-inch depth interval for porous surfaces not 2-inches.*
- b. Based on the sampling procedure employed, EPA can make no determination on the nature/extent of the PCB contamination into the surrounding substrates.*
- c. For certain porous substrates, such as the concrete block, the extent of the PCB contamination was not established and thus it is impossible to determine what the base cleanup plan for the PCB-contaminated substrates would be.*

We conducted additional testing following the EPA's concrete SOP to determine if leaching occurred into surrounding substrates. Results of analysis for concrete block and brick abutting caulk are summarized in Table 3A and 3B, respectively. Results indicate PCBs leaching of PCBs into concrete block at concentrations exceeding one ppm up to 16 inches from caulk joints, but at less than one ppm in two of three samples 36 inches from caulk joints. One sample indicated a PCBs concentration of 1.05 ppm at 36 inches from a caulk joint. For brick, PCBs leaching was noted above one ppm at one-half inch from caulk joints while at four inches from joints concentrations were less than one ppm with one sample at 1.2 ppm. This additional testing has indicated that the extent of leaching in concrete block is significant near the caulk joints but negligible within 36 inches of the joint. The testing has further shown that leaching into brick is minimal, as PCBs concentrations four inches from caulk joints are effective at or below one ppm.

11. The Notification does not indicate if soil sampling was conducted adjacent to exterior caulk joints. At other similar sites, EPA has seen a high potential for PCB contamination to soils located in close proximity to a caulk joint.

Soil sampling has been conducted adjacent to exterior caulk joints at driplines 18" from the building and at 36" from the building. Three of the seven samples collected in the top three inches of soil 18" from the building indicated PCBs concentrations less than one ppm while four samples indicated concentrations

between 1.5-2.9 ppm, as summarized in Table 4 of the revised plan. Further testing indicated typical PCBs concentrations below one ppm at 36" from the building and in the soil from three to six inch depth 18" from the building. Section 5.4 of the plan specifies removal of the top six inches of soil from all non-paved areas around the 1961 building out to three feet from the building edge. Follow-up sampling will be conducted to assure contamination does not exist above one ppm beyond the three foot limit and below the three inch depth within the area three foot from the building to the building edge.

12. Page 13. Section 4.2 *Since the work will be conducted throughout the school year, will warning tape be sufficient to keep students from entering the area.*

Section 4.1 in the revised plan requires full-containment for all work, including two layers of 6-mil polyethylene sheeting and HEPA-filtered air filtration devices to clean the air and create a negative pressure within the work area.

13. Page 13. Section 4.3. *Waste containers should be marked according to 761.40.*

The revised plan indicates waste container marking according to 761.40 under Section 4.2.

14. Page 13 – *The described work practices only indicate that containment will be used on the interior of the building. Generally for these types of projects and given the use of the building, exterior containment is generally used, especially for tasks that would result in high dust concentrations.*

Section 4.1 in the revised plan requires full-containment for all work, including two layers of 6-mil polyethylene sheeting and HEPA-filtered air filtration devices to clean the air and create a negative pressure within the work area.

15. Page 14.

- a. *As previously indicated, based on the data collected-to-date, EPA does not believe that there is sufficient information to support the proposed remedial plan. Further, Section 5.2 references only non-porous surfaces. It is clear that the PCB-contaminated substrates include porous surfaces.*
- b. *Section 5.2 Bullet two. EPA believes the solvent reference should be Capsur by Integrated Chemistries.*

Based on EPA's comment, additional sampling of air, caulk, concrete block, brick and soil has been conducted in support of the proposed plan. We believe air sampling results indicate that ambient PCB concentrations are significantly less than EPA reference concentrations. Additional sampling of caulk in the 1979 building demonstrated that PCBs are not present in caulks above a concentration

of one ppm. Thus, the only known PCBs in the building are present in the original 1961 building. Sampling of masonry using EPA protocols has indicated PCBs leaching into concrete block and to a lesser extent brick at concentrations above one ppm. We recognize that porous materials are present, including fiber board within joints that will be removed, and in concrete block, and brick that will be encapsulated.

Under Section 5.2, "Capsur" is correctly spelled in the revised plan.

16. Page 15, Section 5.3 – Verification sampling will need to include bulk sampling, not just wipe sampling. The PCB cleanup standard would be less than or equal to (≤ 1 ppm for building porous surfaces without further restriction. For non-porous surfaces, the PCB cleanup standard generally would be $\leq 1 \mu\text{g}/100 \text{ cm}^2$ for schools. See previous specific comment 3.

The work plan requires all fiber board abutting caulk to be disposed of as PCB remediation waste. Thus, sampling it will be unnecessary. The wipe standard for non-porous surfaces has been modified in the revised plan under Section 7.2 to include the EPA PCB cleanup standard for schools of $\leq 1 \mu\text{g}/100 \text{ cm}^2$. This will apply to non-porous surfaces as well as the encapsulated surfaces on concrete block and brick.

17. Page 16, Section 6.1 Container marking requirements are located in 761.40. Storage requirements are found in 761.65.

The revised work plan reflects the correct regulatory citations.

18. Page 17, Sections 7.2 and 7.3.

- a. See previous specific comment 9 on indoor air sampling results.
- b. Given that insufficient data on nature/extent of PCB contamination has been presented, it is unclear what the actual cost of the remediation would be. Thus, insufficient information exists to say that the costs would be "extraordinary".
- c. The Notification appears to specify Skagard 62 for substrate encapsulation. It is unclear if this encapsulant could be used on an interior application due to its properties. Further, it is unclear if this decision is being left to the contractor or if the final decision on the appropriate and acceptable encapsulant will be made by the City. Please clarify.
- d. For encapsulated surfaces, post-encapsulation surface wipe sampling would be required to verify the effectiveness of the encapsulation.

- i. *Please note that EPA generally requires that the PCB concentrations in the wipe samples be $\leq 1 \mu\text{g}/100 \text{ cm}^2$, not $\leq 10 \mu\text{g}/100 \text{ cm}^2$ for encapsulated surfaces.*
- ii. *For purposes of determining the sampling frequency for encapsulated surfaces, the sampling will need to include all types of encapsulated substrates. This is not clear in the proposed plan under Section 7.2*

As previously noted, in response to item "a" above, the elevated PCB concentration measured in the first round of air samples was not indicative of normal conditions. Sampling in normal conditions indicates airborne PCB concentrations well below acceptable standards established by the EPA.

The owner's building engineer has estimated a cost of \$2.5-3.1 million to remove and replace 36,000 square feet of brick and concrete block that is assumed to be contaminated by PCBs. An estimated encapsulation cost of \$100,000-200,000 indicates this process will provide substantial cost savings over removal and replacement.

According to the manufacturer, Sikagard 62 is an appropriate interior application. The final decision on the type of encapsulant will be made by the City.

Under the revised plan, Section 7.2 proposed post encapsulation wipe sampling includes the appropriate EPA standard and also includes each type of substrate to be encapsulated.

19. *Little information regarding means and methods for PCB removal /storage / disposal is provided in the Notification. Much of the detail appears to be left to the contractor. Thus, please be aware that EPA will require submittal of a contractor work plan for review and approval. The work plan will also need to include information on air monitoring and action levels. If the contractor will not be responsible for the air monitoring, this information and action levels will need to be provided in the Notification.*

The contractor will have the latitude to determine means and methods of temporary storage, transportation and disposal site related to PCB waste. They will be made aware that they must provide a work plan to the EPA for review and approval, including air monitoring and action levels.

20. *If encapsulation is used, a Long Term Monitoring and Maintenance Plan (MMIP) will be required in addition to the Deed Restriction.*

The School Department is in the process of developing a MMIP.

21. EPA notes that the proposed PCB remedial work will occur over multi-phases and over several years. Accordingly, EPA will require that a communications plan be developed for school users to describe the work and to keep users apprised of the progression of the work. At other school sites, fact sheets, information meeting, and development of a web page for the project have been used to support this effort.

The School Department has developed a web site for communicating details of the project renovation and will add PCB specific project information to this web site.

Should you have any questions or if I can be of any further assistance, please do not hesitate to contact me.

Respectfully submitted,
SMITH & WESSEL ASSOCIATES, INC.



William C. Wessel
Principal